

OUR NATURAL GAS.

What Has Been Done in the Fields in the Past.

GREAT THING FOR SALT LAKE.

The Prospects Are Brighter Now Than They Have Been During Any Previous Time.

A GREAT AREA OF GAS TERRITORY CLOSE TO THIS CITY.

Systematic and Earnest Work is Bringing Forth Results that Cannot Help But Attract Millions of Capital to Salt Lake and Create Many New Industries.

The opening paragraph of an excellent article on natural gas which appeared in THE CHRISTMAS HERALD a year ago said:

"Are we on the verge of a natural gas boom that shall make of Salt Lake a second Findlay, Lima, McKeesport, Marion, Anderson or Kokomo?"

It perhaps did not occur to the writer that Salt Lake city, at the time that natural gas was discovered, contained a population greater than all the cities named, and that the capital and deposits of its banks exceeded those of all the cities mentioned combined.

THEIR IS NO COMPARISON.

It is impossible to gauge the advantages that will accrue to this city from the introduction of gas by a comparison with the growth of other cities, for there has been no other city similarly situated. There are possibilities here a hundred fold more. No other city with a population of 50,000 is within such close proximity to its natural gas belt. There is a great waste in conveying natural gas through pipes for a long distance which increases at a rapid ratio the cost of its delivery.

Toledo is the only large city near the Ohio gas fields, and yet it requires the laying of thirty-four miles of pipe to reach its corporate limits, and Indianapolis is twenty-three miles distant from the Indiana gas fields, while the heart of the gas reservoir, as far as it has been defined, is within twelve miles of the business center of this city. One advantage in the cost of piping gas is two to one as against Indianapolis and three to one as compared to Toledo.

The introduction of natural gas to these cities in the reduction of the cost of living was in comparison with \$2 coal and while the utilization of gas fuel in this city is against coal costing the consumers \$5.50 per ton. This contrast is very striking. For instance: If gas were furnished free

to consumers in Ohio and Indiana they would save but \$2 per ton, while if it were sold in Salt Lake city to compete with \$2 coal the living expenses of families here would be reduced \$3.50 per ton.

Ergo, on every ton of coal in this city replaced by gas means a saving of \$3.50 per ton more than it does to the people of Ohio and Indiana.

But the gas revolution means much more to us from the fact that Salt Lake city is in the same condition that Kansas City, Omaha and Denver were before their periods of rapid growth. It is unmade and its resources comparatively undeveloped. Without cheap fuel it is in the line of those commercial natural advantages which doubled and quadrupled Kansas City, Omaha and Denver.

With a reduction of the cost of fuel to not to exceed \$2 a ton for coal, there is no telling to what extent it would grow.

It has an inherent power of expansion and conquest of commercial supremacy that in some indefinable way overcomes all hindrances and in spite of dear fuel, dearth of manufacturing, discriminating railroad tariffs, adverse silver legislation, and the distrust of outside capital to investments in a territory, it has become the commercial metropolis of the inter-mountain states and territories.

Who can estimate the growth that would follow cheap fuel, the introduction of factories, low railroad tariffs, favorable silver legislation and steeplechase? WHAT MUST RESULT.

It is fair to predicate that with natural gas all other blessings would follow. The only hindrance to manufacturing has been the exorbitant price of coal. For the very mountains are burdened with all known metals, and the valleys have every variety of clays, and all the salts of the earth are to be found in the great lake.

The province of this article is but to supplement that of a year ago, chronicling the progress that has been made in defining and developing the gas territory. This extract is taken from the article of last year:

"As THE CHRISTMAS HERALD goes to press, three days ahead of the Christmas

date, the air is full of excitement regarding the American Natural Gas company's discoveries just north of the city on the shores of the Great Salt Lake. That gas has been found there is no manner of doubt; that it exists in immense quantities is equally certain to all who have beheld the mighty eruptions which are going on now and having been going on for some weeks past, and that in quality, quantity and pressure it equals the celebrated finds of Ohio, Pennsylvania and Indiana many people of experience seem to agree.

"The Great Basin, owned and controlled by the American Natural Gas company, is situated north and west of Salt Lake city, about eight miles distant, and extends to the shores of the Great Salt Lake, and covers a very great area of country, including the portion of the Great Salt Lake between the Antelope, Oquirrh, Farmington and Wasatch. Faults embracing 2,500 acres of territory controlled by this company. The geological structure is eminently perfect, and surface indications show over twenty-five distinct flows of gas and six flows of light petroleum oil.

At the time the above was written the great discoveries had just been made and the excitement was at its height, and confusion that follows the report of a strike of fabulously rich ore in the mountains. A year has intervened and there has been time enough to "boil down" and take an inventory of the progress made in developing this field.

Enthusiasm over the discovery is not so intense as it was at the time of wild and speculative speculation having been replaced by practical organization. The American company, which was the principal prospector in the field early in the year, discovered that their charter was defective and that a reorganization was necessary to effect the work. The stockholders, while men of means, were new to the business and lacked an efficient head. This caused a delay of five months, during which time work was at a stand still, but this procrastination was more than compensated by getting the company on a proper working basis and securing the co-operation of two of Colorado's most wealthy and progressive citizens to take an interest in the company, Messrs. C. Boettcher and A. V. Hunter. The New American Natural Gas company as organized is a formidable corporation both in the character of its board of directors and the wealth the individual members represent. It is capitalized at \$5,000,000 and has all the resources at its back to drill new wells and to build a pipe line to the city.

All the prospecting prior to the organization was done with such crude drilling machinery as was in use in this territory for driving wells for artesian springs. Its energetic managers lost no time but at once ordered a modern drilling outfit, similar to those used in the eastern oil and gas fields and the big derrick now breaks the western horizon with its great timbers and the ball and chain is revolving day and night. Five wells have been drilled in and the No. 6 is under way. No. 4 has been drilled to a depth of from seven hundred to seven hundred and fifty feet, and the flow of gas which it gives out when turned on dress parade is far above the average wells in the Ohio and Indiana gas fields. There is so much exaggeration in regard to the capacity of various wells that the report of the expert, Mr. John Wolfe, who measured the flow of gas, is here given, that persons desiring accurate information may not be imposed upon:

This is to certify that after a careful examination of your gas fields, situated some twelve miles north of Salt Lake city, Utah, and made by me within the last few days, and measurements of the volume or quantity of gas flowing from two of your wells, called No. 3 and No. 4, I have to report that No. 3 measures 902.50 cubic feet in twenty-four hours. No. 4 measures 430,000 cubic feet in twenty-four hours. The flow of gas in No. 4 well is kept back in part from the fact that the pipe in the well is only two inches in diameter. The quality of the gas is good, and in my opinion is permanent. In fact I do not know of another gas field that shows so strong and has better indications of permanency, and so large, as this does from the same amount of development. Very respectfully,
JOHN WOLFE, Expert.
SALT LAKE CITY, Utah, July 14, 1902.

The output of gas in wells No. 2 and No. 3, owned by this company, is about the same as that of No. 4, and they are capped in to prevent any waste of the product. Well No. 5 was started with 8-inch casing but was reduced to 6-inch. The pipe is now down 900 feet, the well having been driven through the gas strata with a view to striking gas at a greater depth than the 750-foot level. Drilling has been just begun on No. 6, and the casing used is 6-inch. The American company owns in fee simple 250 acres of land upon which its wells are located, but its holds favorable leases on 3,500 acres of contiguous territory, all of which is promising gas land.

THE SHOWING OF GAS

has been so satisfactory that the American company has entered into a contract with Rhodes Bros. of Denver, to construct a pipe line as soon as they have sufficient wells drilled to supply the necessary gas. They estimate that the best of the wells already drilled will earn the company \$100 a day as soon as the gas is piped to the city.

The status exposed by the drilling of these wells were Alluvion shale, soapstone and alternate layers of blue clay and quick sands; the latter always containing good flows of water. Driftwood has been frequently encountered at a depth of 300 feet, and there is strong evidence of the tissue and fiber of decomposing organic bodies.

Comparatively nothing is known of the geological formation of this valley beyond the depth already explored by the drill—1,000 feet. The Wasatch mountains expose the upper carboniferous measures, next are the Medina, the rock that is used here as flagstone. Utica shales, at the head of City Creek canyon, are well defined, correlative limestone is well defined beyond the Salt Lake Mill and Elevator works, (within the city limits) where the only true horizontal rocks of the Wasatch range are well defined. With this meager outline and a knowledge of the fact that the dip from the Oquirrh range easterly is much less than the dip of the Wasatch mountains westerly, it is difficult to locate the line of fracture, and it will require considerable exploring to define the gas reservoir.

THE PIPE LINE.

Major C. T. Doherty, of Anderson, who is one of the most progressive natural gas men in the state of Indiana and who was the first person to supply that city, as well as other Indiana towns with gas plants, is the most active explorer in this field.

Major Doherty, after two visits to this city and after a careful investigation which included tests by measurement of the gas wells of the American company, became satisfied that a great reservoir of gas existed here and at once leased ground, ordered a drilling outfit and purchased the necessary tubing for

the construction of a pipe line from the gas field to the city. He has a derrick up on the Logan Young farm and had he not met with an accident which caused much delay in fishing for tools he, no doubt, would have encountered a good flow of gas ere this. The pipe which Major Doherty ordered has been distributed along the line of the Rio Grande Western railway and will be laid in the trenches as soon as the first well is put down. He has expended upwards of \$100,000 already in this field and is prepared to pipe gas to this city within twenty days after he strikes the gas.

OTHERS IN THE FIELD.

The Indiana Natural Gas and Pipe company secured leases on several thousand acres of land northwest of the city and bound themselves to drill wells on the ground leased. The company made a proposition to expend \$25,000 in exploring their territory if the city council would give them a franchise. This the council refused, whereupon the company withdrew from the field, forfeiting its leases and is now operating in the vicinity of Provo, having secured a franchise from that city.

The only franchise of the streets for the piping of natural gas is owned by the American company, but the council has expressed its willingness to grant other franchises as soon as the gas is brought to the corporation lines.

The Salt Lake Improvement company put down a well on the Pettit farm, just north of the city, and at a depth of 900 feet met with a good flow of water. Drilling has been just begun on No. 5, 1,500 feet distant from the Pettit well, but after they attained a depth of 400 feet were prevented from going any lower by an accident.

The Salt Lake Natural Gas company, of which Wendell Benson is the president, I. C. Karrick treasurer and Gus Haines secretary, began operations on the Judy farm, eight miles northwest of the city. They put the well down 952 feet, met with bad luck and the machinery and derrick are standing still. They struck an enormous stream of pure artesian water that flows 3,000 gallons per minute, and that is worth many thousands of dollars for irrigation purposes.

The United States Gas and Oil company is confining its operations to taking leases on prospective oil and gas lands. They have two natural springs of petroleum on land which they have leased. The officers of the company are as follows: George Traub, president; Emory Ward, vice-president; John B. Taylor, secretary and treasurer. They value their leases at \$150,000.

AT OTHER POINTS.

During the past summer the Inland Salt company drilled a well 300 feet at Saltair, thirteen miles west of the city on the shores of Great Salt Lake but had to abandon it owing to the pipe becoming buckled. They then sunk another well along side of the abandoned well and secured a nice flow of gas at a depth of 500 feet.

All the wells mentioned showed good flows of gas in drilling but they did not compare with those of the American company.

Frank Hines has put down a number of drive wells for water and all of them show some gas.

On the Jensen place, one and one half miles from Brigham City there is a flow of gas through a one and one half inch pipe that is a pure and dry quality. This is the fourth year they have been using the product of this well for burning

brick in the summer and lime in the winter. There are five or six other small wells in this locality producing gas.

At Corinne, on the north side of J. W. Guthrie's hotel, they have a 9-inch well down about 618 feet. There is a very heavy flow of water and a good output of gas, which at times shows a trace of petroleum. The gas is utilized to light and heat the hotel.

At Provo there are unmistakable signs of a large reservoir of gas. There are a dozen wells in that city that have a good gas showing and one of the wells on the main street throws a flame to a height of thirty-five feet.

On the west side of Provo Lake, near Poisson Point, there is a natural gas spring. During the dry season the well can be lighted with a match, while during the wet season the spring is completely submerged by the rise of the lake, and the water is forced up like a boiling spring by the energy of the gas in raising itself.

In Utah territory it has been known ever since the early settlement by the indomitable Mormon pioneers. A large spring exists southeast of their output that has a record of over thirty years; another at the mouth of the Jordan river, that has been burning at intervals of over twenty-five years, and on the Drake and Keyser property near Centerville, some little drive wells have had a flow for over five years, phenomenal in their output and fully demonstrating the permanency of the supply. About fifty miles north of Salt Lake city, natural gas has been utilized in burning brick and lime for several years. The Salt Lake Improvement and Natural Gas company have two flowing wells of sufficient capacity to supply the requirements of the city and two additional wells have been ordered.

Natural gas, in greater or less quantities, is found all over that vast region in this territory that was at one time submerged by Lake Bonneville, but nearly all the exploring has been driving pipes for water wells not more than 250 feet in depth.

The Trenton rock gas-producing area of Indiana is one vast connected field, embracing more than a dozen counties and containing an area of about 5,000 square miles. Throughout this area the initial rock pressure is about 320 pounds.

A condition necessary to secure gas in large quantities is an imperious covering of shale, and the numerous strata which the drill has exposed in the Salt Lake basin indicate that this provision has been amply supplied. The reservoir must consist of porous rock or sand, bounded above and below and on every side by impervious strata.

ORIGIN OF GAS.

It is well known that all forms of organic matter contain more or less of the elements of both oil and gas. All forms of organic matter decompose spontaneously, and in the decomposition gas is generated. Where organic bodies perished and were buried under conditions that did not permit of immediate decomposition, where they were buried under accumulations of sediment under seas, lakes and lagoons, and shut from air, decomposition was not completed for ages. If decomposition was complete the petroleum would all be resolved into gas, nor was the generated gas permitted to escape. The super-lying accumulations formed an impenetrable covering confinement both oil and gas to their original horizon.

Much of this ancient vegetation accumulated around the margins of and in the beds of lakes and swamps at the close

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